Small Business Innovation Research/Small Business Tech Transfer

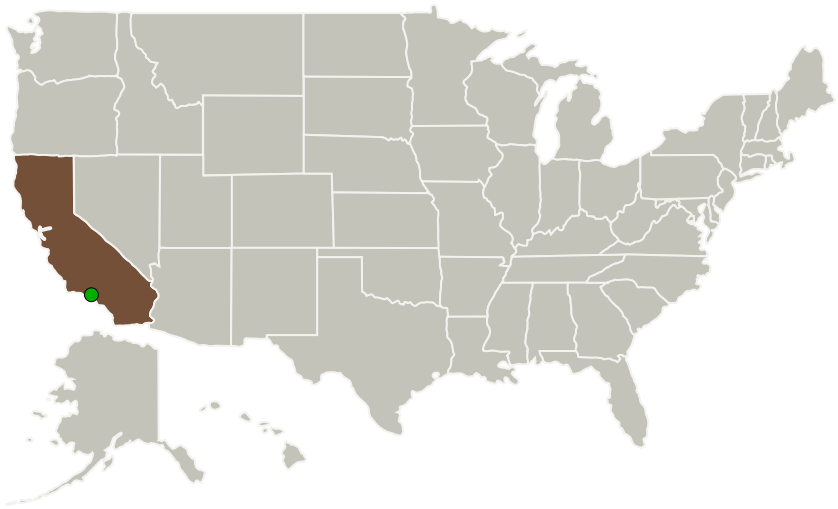
Bulk GaN Schottky Diodes for Millimeter Wave Frequency Multipliers, Phase I

Completed Technology Project (2016 - 2016)

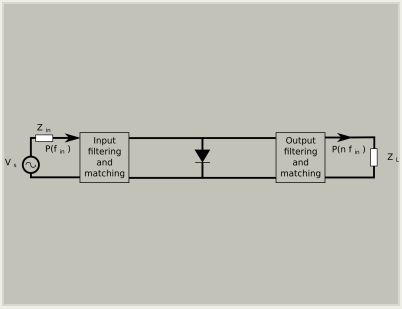
Project Introduction

Within the context of this project, White Light Power Inc. (WLPI) will demonstrate the feasibility of using vertical GaN Schottky diodes for high-power rectification at W-band. To achieve this goal, WLPI will utilize it's experience of fabricating power rectifier diodes to enable highly cost-efficient selection of a wafer. The same experience will also be utilized in selecting and working with an epi-supplier to ensure demonstration of the requisite 1000 cm2/Vs mobility. WLPI will design, manufacture and test the diodes to ensure that the device characteristics such as breakdown voltage, C-V characteristics, leakage and ideality factor are consistent with the target 200 mW power handling capacity. WLPI will provide data and documentation supporting and detailing the wafer selection, epi qualification, manufacturing and testing of the devices. WLPI will dice and deliver devices to NASA for further testing.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
White Light Power, Inc.	Lead Organization	Industry	Los Altos, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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Primary U.S. Work Locations

California

Project Transitions

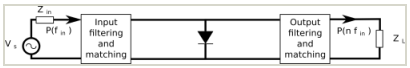
June 2016: Project Start

December 2016: Closed out

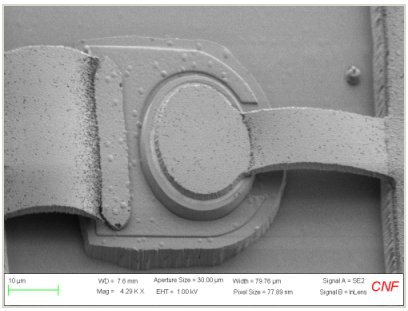
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139767)*

Images



Briefing Chart Image
Bulk GaN Schottky Diodes for Millimeter Wave Frequency Multipliers, Phase I
(https://techport.nasa.gov/image/132216)



Final Summary Chart Image
Bulk GaN Schottky Diodes for Millimeter Wave Frequency Multipliers, Phase I Project Image
(https://techport.nasa.gov/image/130821)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

White Light Power, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

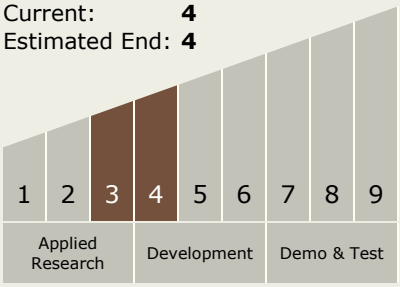
Carlos Torrez

Principal Investigator:

Richard J Brown

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System